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# A learning process model to achieve continuous improvement and innovation

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## Abstract

According to Revans, for an organization to be successful in today's rapidly changing environment, its capacity to learn must exceed the rate of change imposed on it. Through an examination of the processes by which individuals in organizations learn, develops a learning process model to facilitate continuous improvement and innovation in business processes. Draws on relevant theories which provide an understanding of how and why people learn, barriers which prevent learning, and the role managers need to play in the learning process. Provides a vision of what may be achieved by the systematic implementation of the learning process model. Deming's system of profound knowledge provides a focus for learning activity. The model has been developed in a way which will be of practical use to managers working in organizations.

## Objectives

The management philosophy of W. Edwards Deming[1] with its profound implications for management-led business transformation, is underpinned by the practice of innovation and continuous improvement of systems and processes, based on understanding and knowledge. More recently, business process re-engineering has been adopted by many organizations as a tool for a fundamental review of their key business processes, and is providing many opportunities for significant step change improvements. It can also provide the added opportunity to design into the new process the capability of continuous ongoing improvement. Success in this area will depend on the ability of leaders, working in the process, and the overall system in which it operates, to create an environment where learning and innovation can be facilitated.

This article seeks to help practising managers:

- Develop an understanding of how learning can be stimulated, by examining various relevant theories, concepts and techniques of learning.
- Examine how this knowledge can be applied to the design of processes, so that learning, and thereby continuous improvement and innovation, is maximized.

## Learning as a process that results in changed behaviour

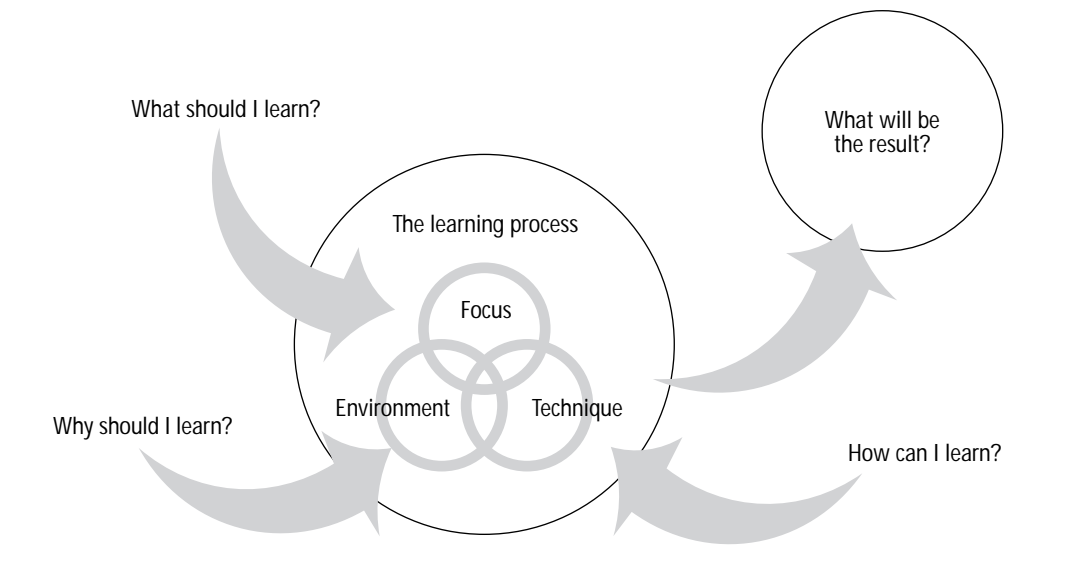
Figure 1 shows learning as a process. Three ingredients are needed for this process to be effective:

- (1) *focus* to plot a course for the learning effort;
- (2) an *environment* which facilitates learning;
- (3) *techniques* which enable learning to be efficient.

The interlocking circles on the model imply that the ingredients are not discrete, but overlap, and are interdependent if the whole learning process is to be optimized.

In simple terms these are the *hows*, *whys*, and *whats* of learning, and these will be examined in more detail. Readers are invited to relate the *hows* and *whys* to their own lifetime learning experiences, to establish a "ring of truth", before going on to examine what has to be learned to achieve continuous improvement and innovation in business processes.

Figure 1 Learning as a process



**The “hows” of learning – techniques to help the learning process**

The learning debate centres on two models, which reflect profound differences in values and ideology. In very simple terms the first model, which I have called the “taught model”, sees learning as something which is “done to” people, whereas the second, the “discovery model”, sees it as something which people “do” for themselves. Each model appears to be based on sound theory; mainly behaviourism in the case of the taught model

or gestalt in the case of discovery learning. The extreme versions of the models, together with the characteristics which seem to accompany them, are shown in Table I.

Each model has a distinct set of advantages and disadvantages. I believe it is useful to consider the models as the opposite ends of a spectrum, with an infinite range of options in between. This approach allows us to relate the relative benefits of each learning model, more precisely to the objectives of the business process being considered, rather than take up a black/white, good/bad position.

Table I Learning methods – two extremes

	Taught	↔	Discovery
<b>Model</b>	Learn theory based on research. Test by application. Change behaviour. Teach others, until better theory is developed		Identify problems. Experiment to discover solutions. Develop theory. Change behaviour. Apply to similar situations
<b>Focus</b>	Teacher-centred Learning managed by the organization		Learner-centred Learning managed by the individual
<b>Motivation</b>	Extrinsic		Intrinsic
<b>Culture</b>	Controlled Bureaucratic		Empowered Autonomous
<b>Theoretical basis</b>	Behaviourist school – Skinner <i>et al.</i> Determinism		Gestalt school – Kohler <i>et al.</i> Free will
<b>Advantages</b>	Consistency Conformity Low risk		Creativity Innovation Responsiveness to customers
<b>Disadvantages</b>	Can stifle intrinsic motivation Can cause conditioned responses which create barriers to change and learning		Can focus on personal rather than organizational objectives Higher risk of failure

To implement the learning company concept [2], seems to require a move through the spectrum towards the discovery model, to gain the benefits of creativity, innovation, customer responsiveness, and continuous improvement, which this style of learning can deliver. At the same time it is necessary to manage the disadvantages of discovery learning, namely aligning organizational and personal objectives, and minimizing the risk of failure. A move too far along the spectrum will lose some of the benefits of the taught model, such as consistency and conformity. Also, the move away from the taught model will be resisted by conditioned responses which that model has itself created, and which show themselves as learning disabilities and barriers to change.

I do not believe that the taught model is bad, *per se*, and that the discovery model is good. It is more a case of what is appropriate to the business requirements. For instance, in a matter relating to the safety of staff or the public, there may be a need to adhere strictly to safety procedures, and a taught learning process may be the only effective way of ensuring such conformity. A key requirement in developing organizational learning will be to achieve an optimum balance between the learning systems described, which meets the detailed requirements of the business process. Nevertheless the release of individual

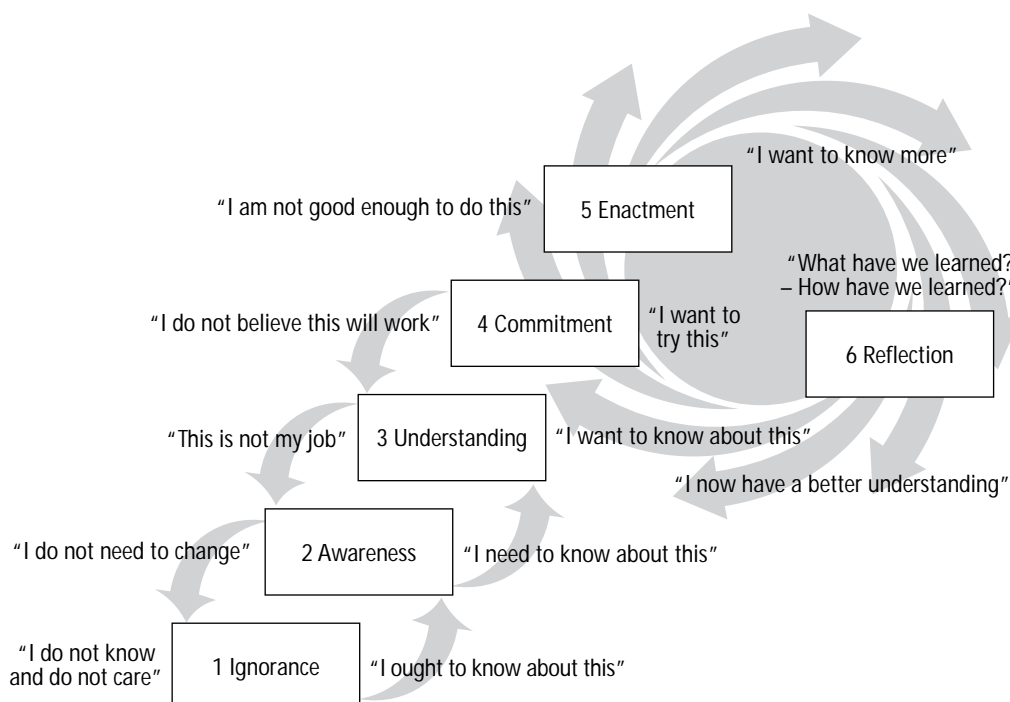
potential, resulting in behavioural change and creative and innovative process improvements will only really happen if existing learning systems move radically towards the discovery model.

### The “whys” of learning – creating an environment which provides meaning

Whichever learning method is appropriate, it is useful to consider the learning process as taking place in stages, and the model developed to explain this is shown in Figure 2.

In concept, learning requires a movement through the stages, but for this to happen, the individual will need to be motivated to expend the effort necessary. Motivation can be intrinsic, i.e. from within the individual, or extrinsic, i.e. imposed from outside, usually by the organization. Theory suggests that individuals will be intrinsically motivated to move through the model, and the strength of this motivation will vary from individual to individual. Also, individuals will be prevented from moving through the model by inbuilt attitudes, values, beliefs and responses, of which they are often not aware. These responses may be the direct result of conditioning, by the organization, or “taught” learning systems in general. An individual will only move through the model while the

Figure 2 The stages of learning



driving forces exceed the restraining forces, and will become “stuck” when the forces are exactly matched[3]. Typical expressions which describe the driving and restraining forces at each stage of the process are shown on the model, but it is important to understand that these will be unique to each individual[4]. It will be useful to look at each stage of the model in turn, and explore some of the issues which may surround it.

### **Ignorance**

“No one knows what they don’t know”, so no blame can be attached to individuals who find themselves in a state of ignorance. Indeed, this stage is, or was, the starting point for everyone. It can be argued that it is also the easiest stage to move from by enquiring.

### **Awareness**

Having developed an awareness, motivation will be needed for the individual to input sufficient effort to gain an understanding of the subject[5]. Barriers to learning are likely to be a legacy from rigid organizational and wage structures – “It’s not my job”, and “I’m not paid to know that” being typical responses. The development of supportive teamworking, and peer recognition for the effort of self-development may be powerful antidotes. Conversely, ill-considered reward systems and team structures reinforce the barriers.

### **Understanding**

The development of understanding will take place in stages, as the depth of knowledge increases. Shallow understanding will generally result from single-loop learning[6], but double-loop learning will be needed if deep understanding is to be achieved. Commitment will start to develop provided the knowledge is perceived as meeting the needs of the individual and the organization[7,8]. On the other hand, as the depth of understanding increases, it may start to challenge deeply held beliefs and values, which either overtly or subconsciously may limit the move to commitment. Senge[9] calls this “creative tension”.

### **Commitment**

Commitment will not be achieved without “intrinsic interest and curiosity”[9]. If this is not present, the move to action may not take place. Many training courses do not have the desired effect because they are imposed, and are not attended because of an intrinsic desire

to learn. This desire cannot be directed, but must come from within the individual. However, it can be nurtured and encouraged. To be most effective, learning at this level must be pulled by the individual, not pushed by the organization. Also, the barriers preventing the transition from commitment to enactment can be formidable. Usually, they will require the individual to change behaviour. Often this will bring into play a powerful, inbuilt, and unconscious defence mechanism. Argyris[6] calls this “defensive reasoning”. The individual will need to develop a high level of self-awareness if this barrier is to be breached.

### **Enactment**

When individuals, working within teams, move to enactment, real improvements to working processes will start to emerge. However, this involves a degree of risk, and the working environment must allow this if benefits are to be gained. Development of this environment will facilitate insight learning[10], and increase the probability of innovation and creative solutions to problems[11]. The release of this creativity will be the source of future competitive advantage. Effective discovery learning systems can enable individuals to move very quickly to this stage, and Revan’s action learning concepts[12] are based on this. On the other hand, the environment created by taught learning systems may inhibit changes to processes and limit their capacity to improve. For instance, quality management systems, such as BS 5750 and ISO 9000, can create a culture of “conformance”, where changes to processes and new ideas are discouraged, and would be criticized by auditing procedures.

### **Reflection**

This is probably the most important part of the learning process which is often missing in “taught” organizations. This is where actions, outcomes and theories are evaluated, and deep learning takes place. The compliant nature of “taught” systems often means that individuals are not encouraged to question or challenge theories, and inappropriate actions continue to be taken long after those theories have been discredited. In extreme cases of operant conditioning, where actions are a result of “learning by rote”, the difficulties in achieving a change in behaviour needed to enable deep learning to take place should not be underestimated. When effective, reflection

increases understanding, which, in turn increases commitment and action, and a virtuous cycle of learning is unleashed.

**The role of leadership in creating a learning environment**

My experience has shown me that success in achieving the learning company vision depends greatly on the effectiveness of managers and team leaders in creating an environment where individual, team, and thereby, organizational learning is facilitated. In order to do this they will need a deep understanding of the learning process, to be able to identify an individual’s position on the stages of learning model, to understand the driving and restraining forces applicable to the individual at that time, and have intervention strategies to facilitate movement through the stages.

Figure 3 shows the stages of learning model, with the role of leadership superimposed. The various aspects of the leadership role will be examined in more detail.

**Questioning**

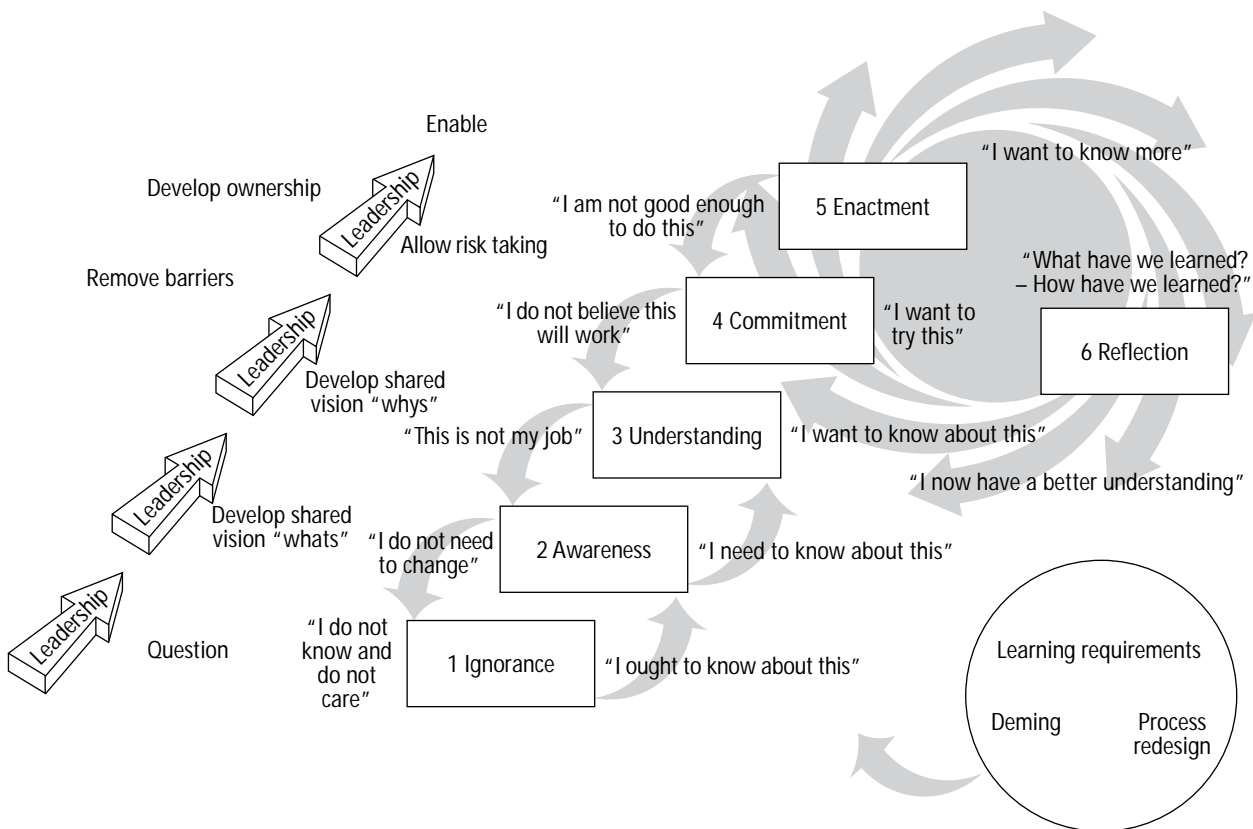
The first step up the learning ladder is to move from a state of ignorance to being aware that an area of knowledge exists, and that it

may be of benefit to both the individual and the organization. The leader will need to have this knowledge already, and the enthusiasm and commitment to put it into practice. The leader’s position as a role model[13] will therefore be vital in gaining the attention and interest of the team. Other team members may also have greater understanding, and can provide help as mentors and role models.

**Developing shared vision and ownership**

Senge[9] sees “developing a shared vision” as one of the five disciplines of learning, and an ability to do this in a participative way with the team will be a key requirement of the leader. This will be a two stage process, as the level of understanding of the team develops. Initially the leader will concentrate of the “whats” of the vision, and the role that learning will play in its achievement. As learning develops, the debate will increasingly move into the “why” areas, and the facilitation of this process up and down the organization will enhance organizational learning. It will also start to expose the barriers preventing movement up the learning ladder, and enable the leader to evolve his own understanding and develop strategies to minimize their effects.

Figure 3 The role of leadership



The participative approach[14] will help unlock intrinsic motivation, by enabling individuals to satisfy their inner needs[7,8].

### **Enabling**

At some stage there will be a need to try something new. We can develop an understanding and commitment to riding a bicycle, but until we try we will never be able to ride. However, the first few attempts involve a high risk of falling off. The leader must, at this stage, provide both opportunity and encouragement, if the benefits are to be achieved. Strategies must also be developed to minimize risk, and ensure that failure does not prevent the individual from trying again. The more quickly individuals can be moved to the enactment stage, the more quickly experiential learning will start.

### **Removing barriers**

Probably the most important role of the leader is to identify and minimize the effects of barriers to learning[3]. These will be present at each stage of the learning process, but will become more challenging as the higher stages of the ladder are reached. The leader will need to understand the sort of things which cause individuals to become “stuck” on the ladder, and develop an awareness of when and why this is happening. Individuals will not necessarily be aware of the high level barriers which are operating within themselves, and these will need to be drawn into conscious awareness before they can be managed. This is a very complex area to delve into, and to be effective, leaders will require a high level of understanding of psychology. The level of understanding needed is very rare in most organizations. Clearly we have here a “chicken and egg” situation, where leaders from the top down will need to be highly motivated to learn about psychology, without yet having the very understanding which will be needed to remove the barriers to such learning. The work of Senge[9], Argyris[6] and Goldratt[15] will help to start this learning process, but as high level barriers are encountered, outside help may be needed to understand and manage them.

### **The “whats” of learning – enabling a focus on organizational goals**

The learning requirements, which will provide the focus for learning activity, will need

to come directly from the requirements of the business process to which they relate, and the needs of the individuals working within that process. By applying the four areas of learning outlined in Deming’s “system of profound knowledge” [4] to a business process, a “menu” of learning, as shown in the Appendix, can be developed. This will form a basis from which detailed, prioritized learning plans can be formulated.

The “menu” contains a mixture of knowledge, attitudes and skills, and different approaches will be needed to assess, and provide learning opportunities in these areas.

### **A learning process model**

The learning process model, Figure 4, has been developed as a tool for systematically applying the various concepts which have been outlined to achieve improvement of business processes.

The various components of the model will be examined in more detail.

### **The learning support system**

The learning support system will need to be designed to provide the environment in which learning will be facilitated, and its success will depend heavily on the quality of leadership provided by managers and team leaders. Consideration will need to be given to the learning styles of the individuals concerned[16,17] and other learning techniques to enable tailored support to be developed which will enable learning experiences to meet individual and team needs.

The main features of the learning support system are described next.

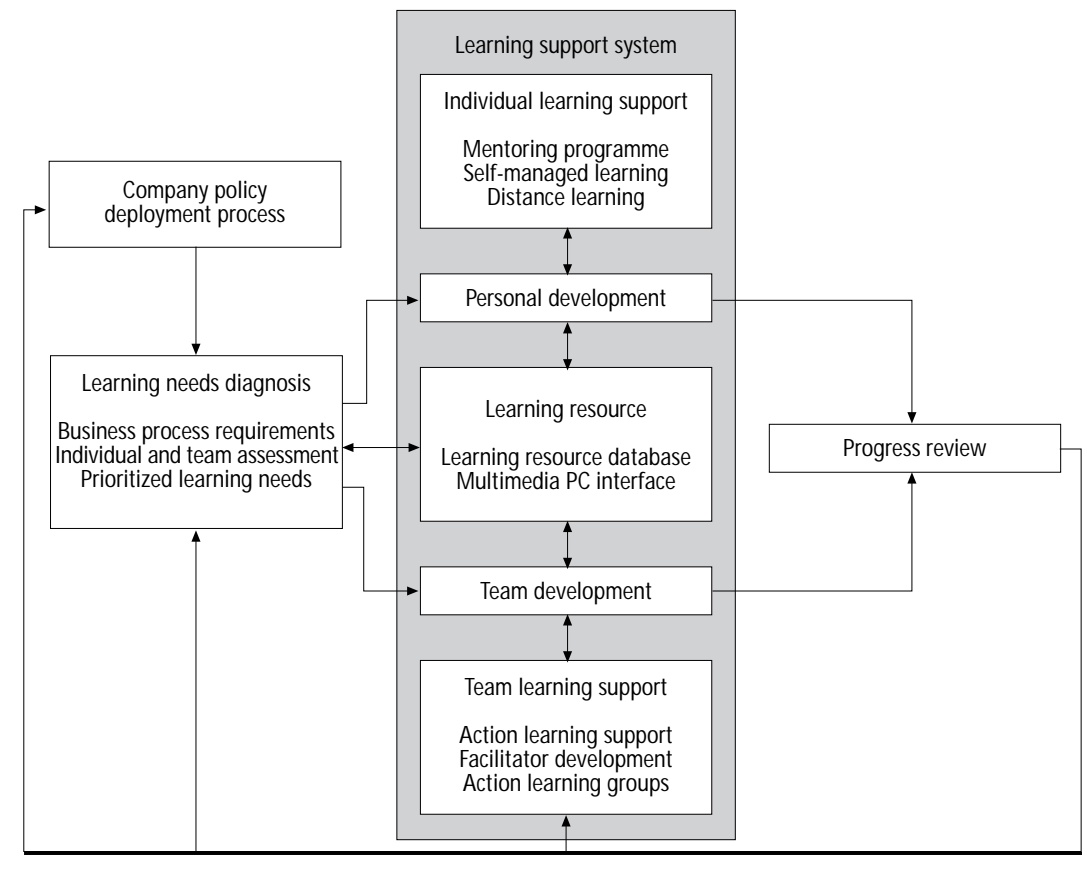
#### *Systematic approach*

While discovery learning requires a minimum of control and direction to be effective, nevertheless a systematic approach to learning support will be needed if individual learning is to contribute towards achieving and developing the aims of the organization. Also it will demonstrate the organization’s commitment to supporting individual learning.

#### *Leadership*

It is clear that effective leadership is the key ingredient for the success of the learning model. A participative leadership style will be required, with high levels of facilitation and coaching skills. Leadership behaviours which stifle learning will need to be recognized and

Figure 4 A learning process model



avoided. Extensive work will be needed with managers and team leaders during the implementation of the model.

*Team learning support*

Flatter structures, with fewer tiers of management, and greater empowerment of teams, are a feature of business process re-engineering. These structures require changes in the way people work together, and support each other. Support for these changes towards effective teamworking will be necessary. The move of leaders from a directive role to a facilitating role, and the greater responsibility placed on team members will need to be supported by team building and group learning activities. There will be a need to move teams more quickly towards "action mode", with effective "what have we learned?" reviews.

*Individual learning support*

Support for individual learning will come from coaching and mentoring, assisting with self-managed learning, and making opportunities available for distance learning where this is appropriate. The emphasis will need to be on identifying and removing barriers to learning, and allowing individuals sufficient freedom to maintain high levels of intrinsic

motivation. At the same time, activities will need to be aligned with business objectives.

*Experimentation opportunities*

Discovery learning requires that opportunities for individuals and teams to experiment are maximized. This will require a creative approach to problem solving, which initially will not sit easily with the existing culture of most organizations. Careful management of risk will be needed, which will include identifying and minimizing exposure to risk.

*Learning resource information systems*

Recent developments in computer systems present exciting opportunities to develop learning resource material, which can be accessed according to need. This enables training and learning material to be "pulled" by individuals and teams on a "just-in-time" basis. Multimedia systems open up enormous potential for demonstrations to support the learning of skills. Feedback from learners can be added to the database. The result can be an organic learning resource, capable of rapid response to changing circumstances, which will help to maximize the effectiveness of organizational learning.

### Learning needs diagnosis

Successful diagnosis and prioritization of organizational learning needs should be directly related to the company's strategy via its policy deployment process. The diagnosis will take place in three stages:

- (1) *Defining the process requirements:* The "shopping list" of learning, outlined earlier, can be used as a basis for developing detailed learning requirements for the people in a particular business process.
- (2) *Individual and team assessment:* Using the stages of learning model as a guide, team leaders and individuals can jointly make an assessment of the level of knowledge or skill in each area. By summing the levels of understanding of individuals, it should be possible to build up a profile of the whole team. Mentors, who have high levels of skills and knowledge, can be identified during this stage of the process, to help individuals with their learning.
- (3) *Prioritizing learning needs:* A process will be needed to merge individual and team learning priorities with the priorities of the organization, again using a participative style. A "little and often" approach is recommended here, so that individuals and teams are not swamped with a daunting list of activities, but focus on a few vital areas, within a short timescale.

### Progress review

Probably the most important feature of the model, is the progress review process. By questioning "What have we learned?" and "How have we learned?", and feeding this information back into the learning process, a cycle of continuous improvement will be established. More importantly, by establishing a feedback loop to the company policy deployment process, company policy can be questioned, challenged and modified as learning takes place. Such "double-loop learning" [6] is the hallmark of a learning organization, and is the vital mechanism for converting individual and team learning into organizational learning.

The review process will only be truly effective in an environment where "challenge" and "criticism" are not perceived as "threat", and where the views and considered opinions of everyone working in the business process are valued by managers at all levels.

### Company policy deployment process

This is the process by which the company develops, communicates, and implements the strategies and policies necessary to meet its business objectives.

### Conclusions

The models and processes outlined have been developed following many years' experience in managing change and process improvement in a large organization. They seek to provide an explanation why some initiatives were successful, while others were less so. They should not be considered as models to be rigidly followed, in a taught manner, but rather as a framework against which past experience can be assessed. All managers have experiences of actions which produced successful outcomes, and actions which failed. So often, however, we omit the reflection stage of the learning process, and continue to take inappropriate actions, destined to fail. Worse still, we copy initiatives which have worked elsewhere, and do not understand why they do not work for us.

Instead, it will be more useful to view the models using a discovery learning process, to help evaluate successful initiatives, and experiment with other ideas which are of interest, always adding a reflection stage to our thought process.

Ideally managers will be stimulated to follow up some of the references, to increase their depth of understanding.

In today's uncertain economic times, it is essential that our capacity to improve and innovate exceeds the rate of change imposed on our organizations. It is essential, therefore, that managers understand the learning process and know how to facilitate its application throughout their areas of responsibility.

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## Appendix: process requirements "menu"

### Systems/processes

- Company mission/values;
- Strategy/business plans;
- High level business processes;
- Policy deployment process;
- Policy deployment plans;
- Policy statements/instructions;
- Budgeting instructions;
- Investment management process;
- Manuals of procedure;
- Design standards/manuals;
- Low level business processes;
- Process flowcharting ;
- Process management understanding;

- Project management;
- The competitive environment.

### Learning/knowledge acquisition;

- Learning processes;
- Learning styles: how we learn;
- Learning process model: how to use it; how to extend knowledge database;
- Personal development opportunities.

### Variation/data analysis;

- Quality management tools:
  - brainstorming;
  - Pareto;
  - histograms;
  - check lists;
  - cause and effect diagrams;
  - scatter diagrams;
  - flowcharts.
- Statistical process control: control charts;
- Benchmarking data;
- Customer research;
- Staff opinion research;
- Quality function deployment;
- Failure modes and effects analysis;
- Design of experiments;
- Process and performance measurement: identifying/eliminating variation.

### People/psychology;

- Team working model: definition of roles;
- Team skills;
- Motivation: intrinsic vs. extrinsic;
- Removing barriers to learning;
- Leadership: transition to self directed teams;
- Facilitation skills;
- Coaching skills;
- Directive vs. process management;
- Effective behaviours;
- Managing change;
- Performance counselling;
- Team briefing (including feedback);
- Transactional analysis.